

# Tecnoflon® PFR 70-WX1

## Perfluoroelastomer Compound

Tecnoflon® PFR 70-WX1 is a 70 Shore A white, FDA and USP Class VI compliant, high temperature perfluoroelastomer (FFKM) compound based on Tecnoflon® PFR 95HT. It provides a significantly wider operational range and superior compression set resistance than any other perfluoroelastomer. With an upper temperature limit of 300°C, it's the elastomer of choice for the most demanding service conditions.

Thanks to its unique curing chemistry, it offers a very broad chemical resistance in a wide variety of media including acids, caustics, ketones, aldehydes, esters, ethers, methanol, solvents, sour gases, amines, hydrocarbons, steam, hot water and mixed process streams. It also shows excellent steam resistance up to 300°C.

Tecnoflon® PFR 70-WX1 can be transformed into virtually any kind of elastomeric sealing element, including O-rings, gaskets, valve bodies, butterfly valves, pump housings and stators, metal bonded parts, diaphragms, profiles, etc.

These sealing elements can be used in mechanical seals, pumps, compressors, valves, reactors, mixers, sprayers, dispensers, quick-connect couplings, controls, instrumentation, etc. in the chemical and petrochemical industry, hydrocarbon processing, petroleum exploration and extraction, food processing, the pharmaceutical and bio-analytical industry, the aerospace and semiconductor manufacturing industries.

### Handling and safety

Normal care and precautions should be taken to avoid skin contact, eye contact and inhaling of fumes. Smoking is prohibited in working areas. Wash hands before eating or smoking. For complete health and safety information, please refer to the material safety data sheet.

### Basic characteristics of the compound are as follows:

Property	Typical Value	Unit	Test Method
ML (1+10') at 121 °C	93		
Specific gravity	2.44	g/cm <sup>3</sup>	ASTM D792
Color	White		
Packaging/form	1 kg / Slabs		

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### Typical rheological and physical properties

Property	Typical Value	Unit	Test Method
<b>MDR 12 min at 170 °C arc 0.5°</b>			ASTM D6601
ML	2.7	lb·in	
MH	18.2	lb·in	
t <sub>s2</sub>	42	s	
t' <sub>50</sub>	83	s	
t' <sub>90</sub>	214	s	

### Mechanical Properties

Property	Typical Value	Unit	Test Method
<b>Press cure: 10 min at 170 °C, post cure: (8+16) h at 250 °C</b>			
100% modulus	5.6	MPa	ASTM D412C
Tensile strength	15.6	MPa	
Elongation at break	280	%	
Hardness	70	Shore A	ASTM D2240
<b>Compression set, 25% deformation, 70h at 200 °C</b>			
#214 O-ring	20	%	ASTM D 395 Method B

### Chemical resistance overview

Chemical	Volume Swelling
Inorganic acids	< 10%
Organic acids	10 – 30%
Alkalis	10 – 30%
Amines (RT)	< 10%
Hot amines (> 70 °C)	30 – 50%
Water/Steam	< 10%
Ketones	< 10%
Esters	< 10%
Ethers	< 10%
Aldehydes	< 10%
Alcohols	< 10%
Hydrocarbons	< 10%
Sour gas	< 10%
Lubricants	< 10%

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### Food and pharma applications

Tecnoflon® PFR 70-WX1 is intended for repeated use in food processing equipment and to be in contact with food types I through VII Table – Types of Raw and Processed Food. The base perfluoroelastomer is registered in the FDA Inventory of Effective Food Contact Substances (FCS) Notifications, being the subject of Food Contact Notification (FCN #126).

See the list of effective notifications for FCN available on the Agency's website at:

<http://www.accessdata.fda.gov/scripts/fcn/fcnNavigation.cfm?rpt=fcsListing>

### Types of Raw and Processed Foods

- I. Nonacid, aqueous products; may contain salt or sugar or both (pH above 5.0).
- II. Acid, aqueous products; may contain salt or sugar or both and include oil-in-water emulsions of low- or high-fat content.
- III. Aqueous, acid or nonacid products containing free oil or fat; may contain salt, and include water-in-oil emulsions of low- or high-fat content.
- IV. Dairy products and modifications:
  - A. Water-in-oil emulsions, high- or low-fat.
  - B. Oil-in-water emulsions, high- or low-fat.
- V. Low-moisture fats and oil.
- VI. Beverages:
  - A. Containing up to 8 percent of alcohol.
  - B. Non-alcoholic.
  - C. Containing more than 8 percent alcohol.
- VII. Bakery products other than those included under Types VIII or IX of this table:
  - A. Moist bakery products with surface containing free fat or oil.
  - B. Moist bakery products with surface containing no free fat or oil.
- VIII. Dry solids with the surface containing no free fat or oil (no end test required).
- IX. Dry solids with the surface containing free fat or oil.

Tecnoflon® PFR 70-WX1 post cured either 8 h at 200 °C or (8+16) h at 290 °C is in compliance with the requirements of USP Plastic Class VI as it passed the United State Pharmacopoeia (USP) Biological Reactivity test, IN VIVO.

Any intermediate combination of both post-curing time and temperature is compliant too.

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